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UNITED STATES DEPARTMENT OF AGRICULTURE  
Bureau of Agricultural Engineering

## MONTHLY NEWS LETTER

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The Squaw Creek Migratory Waterfowl refuge, a project of the Biological Survey for which the engineering work has been carried on by this Bureau, has been completed. Mr. McCrory, accompanied by J. B. Wilson, inspected the work on November 10. Four similar projects are nearing completion.

An article entitled "Cotton Ginning" for publication in the Nebraska Blue Print, a publication of the University of Nebraska, has been prepared by Chas. A. Bennett. Another entitled "Simplified Pitot Tube calculations of the Air Flow in Ducts and Pipes", was published in the November issue of The Cotton Ginners' Journal.

The addition of a covered loading platform to the cotton house, and rat-proofing same, has been started at the Cotton Ginning Laboratory at Stoneville.

On November 1 the Stoneville laboratories were visited by Dr. Jose C. Castelles, Governor of the Chaco Territory of the Republic of Argentina, and Senor Carlos Mata, the Commercial Attache of the Argentine Embassy.

Dr. A. G. Black, Chief of the Bureau of Agricultural Economics, was a visitor at the Cotton Ginning and Fiber Laboratories on November 8.

O. W. Hermann, principal economist in charge of Cotton Cooperative Division, Farm Credit Administration, Washington, D. C., was a visitor at Stoneville on November 16. Mr. Hermann has called the special attention of the large group of cotton cooperative ginners throughout the country to the engineering and ginning work of our Bureau.

Mr. Geo. E. Gaus, principal scientific aide, Bureau of Agricultural Economics, has returned to Washington after several weeks' work at Stoneville.

Mr. L. A. Jones is now making an inspection of several drainage projects. His itinerary includes a visit to D. G. Miller, J. G. Sutton, and a trip to Louisville, Ky. Conferences will be held on future work assignments.

To October 30 the C.C.C. drainage camps of the central region, which are under J. G. Sutton, had moved 606,930 cubic yards of earth and cleared 20,000,000 square yards of ground in reconstruction and maintenance of drainage enterprises. The yardage has increased from 2.6 cubic yards per man day in August 1935, to 9.8 cubic yards per man day in October.



The Delaware and Maryland CCC camps are now completely organized and engaged on the job projects under the supervision of Prof. R.W. Carpenter. One drag line per camp is now available.

Plans for a new current meter rating station to be built in connection with the improvements at the Fort Collins, Colo. hydraulic laboratory, are being prepared by R. L. Parshall. The proposed new rating station will consist of a reinforced concrete tank 5 feet wide, 5 feet deep, and 250 feet long. A special design of car rails and use of a third rail instead of the present trolley are planned. A three-compartment brick building, 10 by 26 feet, will be erected at the east end of the tank to house the rating car and provide space for the instrument and operating room and a fire-proof room for a bank of three transformers. The general layout will provide an independent unit which may be operated without interruption of work within the laboratory. The new tank, which will be 50 feet longer and 1 1/2 feet deeper than the present one, will permit of more accuracy in calibration, especially for cable-suspended equipment.

Consumptive-use-of-water experiments conducted by L. T. Jessup on crops grown in tanks at the Kootenai experiment station, Bonners Ferry, Idaho; showed the following results for the 1935 season: The best grain yield and the best yield of total dry matter for spring wheat occurred where the water table stood at a depth of 2 feet below the surface of peat soil and 3 feet below the surface of silty clay loam soil from planting time until July 1. The consumptive use was 1.70 ft. for the peat soil and 1.53 ft. for the silty clay loam. In the case of oats planted in silt with an organic subsoil, the best grain yield occurred with the water table 3 feet below the surface from planting time until July 1, the consumptive use being 1.75 feet, and the best yield of total dry matter occurred with the water table 1 foot below the surface, the consumptive use being 2.79 feet. In all tanks the water table was gradually lowered by 2 feet after July 1. Precipitation amounting to 0.269 foot was included in the consumptive use of water for both spring wheat and oats.

A preliminary survey of proposed methods of conserving irrigation water in the coastal plain of southern California was made by Harry F. Blaney upon request of the engineer in charge of water survey of Ventura County.

Observations made by Dean W. Bloodgood of silt deposition and quality of water from the Colorado River used for irrigation purposes at the Bard, Calif., experiment station indicated that the depth of silt deposited from 36 irrigations applied in 1934 amounted to .70 inch, of which .47 inch was deposited during September and October. The discharge of the Colorado River during these two months was approximately 2,000 second feet. When the highest discharge of the year, 23,100 second-feet occurred on May 21, the depth of silt deposition was .023 inch. From September to December, inclusive, the irrigation water was alkaline to a considerable degree, the specific electrical conductance averaging 235. However, the poorer water occurred during a time of the year when most crops had about reached their maturity. The best water occurred during May and June when the conductance averaged 88. An electrical conductance of 200 is definitely significant of poor water for irrigation. The average monthly conductance is 179, the poorer water occurring during the time of greatest silt deposition. The highest average concentration of chloride occurred in November when it was 8.02 milligram equivalents. This concentration might have been injurious if it had occurred at a time of year when most of the field crops were in the growing stage. The



average concentration for the year amounted to 5.60 milligram equivalents which is not injurious to field crops.

Preliminary figures submitted by Leslie Bowen for yields of sugar beets, potatoes, and beans grown on small plots at the Scottsbluff, Nebr. experiment station showed variations in yield as follows:

Crop	Yield	Water Applied	Sucrose
		Inches	Percent
Sugar beets	10.316 tons	4.82	18.06
do	21.048 "	15.22	17.00
Potatoes	233.5 bu.	4.86	-
do	339.5 "	12.92	-
Beans	33.42 "	6.07	-
do	63.73 "	14.41	-

Allocation of \$3,000 for improvements at the Medford, Oreg. experiment station was made by the Works Progress Administration.

Mr. R. B. Gray returned Oct. 28 from a trip to the South and Middle-west. While in the South he stopped at Auburn, Ala. for several days discussing plans in connection with the cotton-production and tillage-machinery project. En route north he spent one day viewing soybean combining in the neighborhood of Stoneville, Miss. One day was spent at Moline, Ill., with the John Deere Co., and a day at Racine with the J.I. Case Co., discussing farm power and machinery problems. Sessions of the Farm Equipment Institute and the Society of Automotive Engineers tractor and industrial power groups were attended in Chicago. October 25 was spent at Ames at a field day engineered jointly by the Bureau and Agricultural Engineering Station staff. Improved equipment including pickers with auxiliary snapping rolls to minimize shelled-corn losses, basin-forming listers, and basin-forming pasture seeders were demonstrated as well as improved wagon hitches and four-row check planters.

F. D. Fulton has been transferred from Arlington, Va., to Ames, Iowa, to assist Mr. Shedd in the corn production project, effective the same date.

Ridge or bed planting of sugar beets, a cultural method recently developed and adopted in the Salinas Valley in central California, is attracting considerable attention in that area. The acreage planted on beds will be increased from 200 acres this year to around 1,500 acres next year. Weed control prior to planting the beds is expected to present a difficulty, and experimental work on the problem is being planned.

A tractor-operated push rake for gathering cotton stalks into large piles for burning is being constructed at Presidio, Texas. The same method of attachment is being used for both the shaver and the rake so that either apparatus may be quickly attached for use.

R. M. Merrill and A. H. Graves of the Toledo office attended the corn-machinery field day at Ames October 25, to demonstrate the plow attachments which have been developed at Toledo.

Mr. Merrill conferred with entomologists and pathologists at the Wooster, Ohio, Experiment Station on November 12 regarding cooperative work on experimental methods of insect and disease control.



For three years E. M. Mervine has been experimenting with the possibility of mechanically thinning sugar beets. Knives are drawn across the rows in the same manner as with the cross blocker. He uses knives and spaces of much smaller dimensions in order to leave sufficient single beets to make a crop. This year's trials resulted in more than a 10 % greater yield for mechanically-thinned beets than for hand-thinned beets.

E. M. Dieffenbach states that lime, one of the most common materials used in orchard spray mixtures, is often abrasive to spray machinery. As the quality of lime used for spraying purposes is so variable, he is trying to find a simple chemical or physical test which can be used by orchard owners to guide them in the purchase of such material.

W. M. Hurst and W. R. Humphries returned Nov. 6 from a field trip in the South in connection with a study of small combines in harvesting soybeans. Results of tests made in the Mississippi Delta indicate that these machines are, in general, proving to be more satisfactory for soybeans in that area than combines of the size and type commonly found in the wheat producing States.

At Richmond, Va. they observed an experimental grain and fungicide dust feeder which had been installed in a commercial seed house. They learned that the feeder had been used in treating approximately 13,000 bushels of wheat for seed purposes. A second machine, patterned after the experimental unit, had been constructed by the seedsmen and used in treating about 20,000 bushels each of oats and barley. The feeder is automatic and was developed at Arlington Farm, Va., by Messrs. Hurst, Fulton, and Humphries, who have filed patent applications covering it.

G.A.Cumings states that the studies with tobacco the past season show that both tonnage and cash value are greatest when the fertilizer is applied with a machine in a band 2.5 inches to each side of the plant on a level 1 inch below that of the root crown. The placement of fertilizer directly under the plant or immediately around the plant has early injurious effects and necessitates replacing about 35% of the plants. This injury and delay is reflected in the yields, quality and value of the crop. The prevailing practice in the Southeast of applying the fertilizer in a furrow, and stirring it with the soil, then bedding the land, and setting the plants by hand, gave average returns \$26 per acre less than those of the side placement. The results of this work have prompted some of the transplanter manufacturers to improve their machines and promote sales in the Southeast where few transplanting machines, are, at present used.

J.R. McCalmont has returned to the Washington office from Columbus, Ohio where he assisted in making a study of corn pressures in tall cribs in cooperation with the Department of Agricultural Engineering of Ohio State University. This is a continuation of the studies made at Toledo, the same crib being used but with pressure panels added to the floor of the crib so that more accurate records of the loads supported by the floor would be obtained.

Revision of Department Circular 405, "The Domestic Oil Burner" has been completed by A. H. Senner.

J.W. Simons, who has been stationed at Ames, Iowa, with Div. of Mechanical Equipment, has been transferred to the Division of Structures.

A book by Goodman on "Cooling and Air Conditioning for Comfort" is wanted by the Bureau Library. Will the person who has the book please notify the library?

In this connection our librarian urgently requests that books and periodicals borrowed from the library be not loaned to anyone else without first notifying the library.

Publications issued: History of the Plow. Information Series 48 (mimeo.)

.History of Cultivators. Information Series 52 (Mimeographed)

Bibliography on Stone Houses. (Mimeographed)

Bibliography on Fireplaces. (Mimeographed)